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A.D. 1790 May 21. No 2108.
SAMPSON'S SPECIFICATION.

FIG. 1.

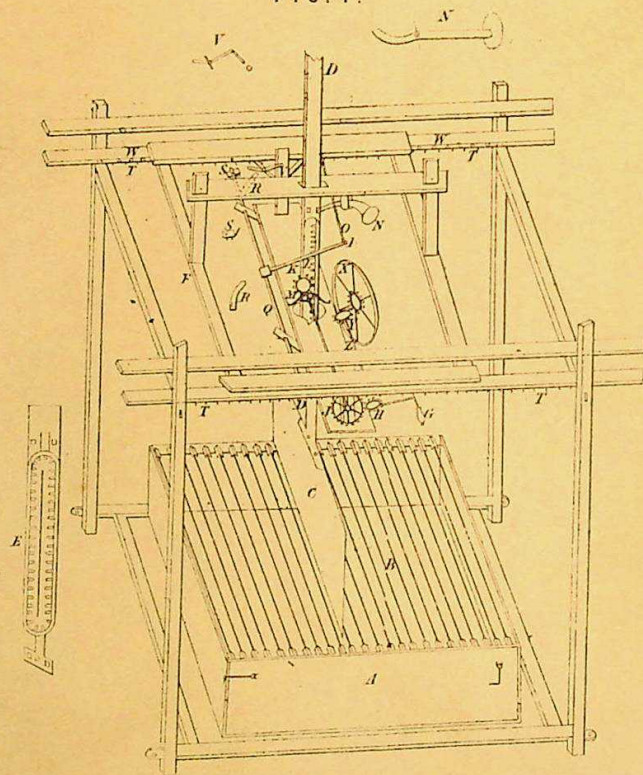
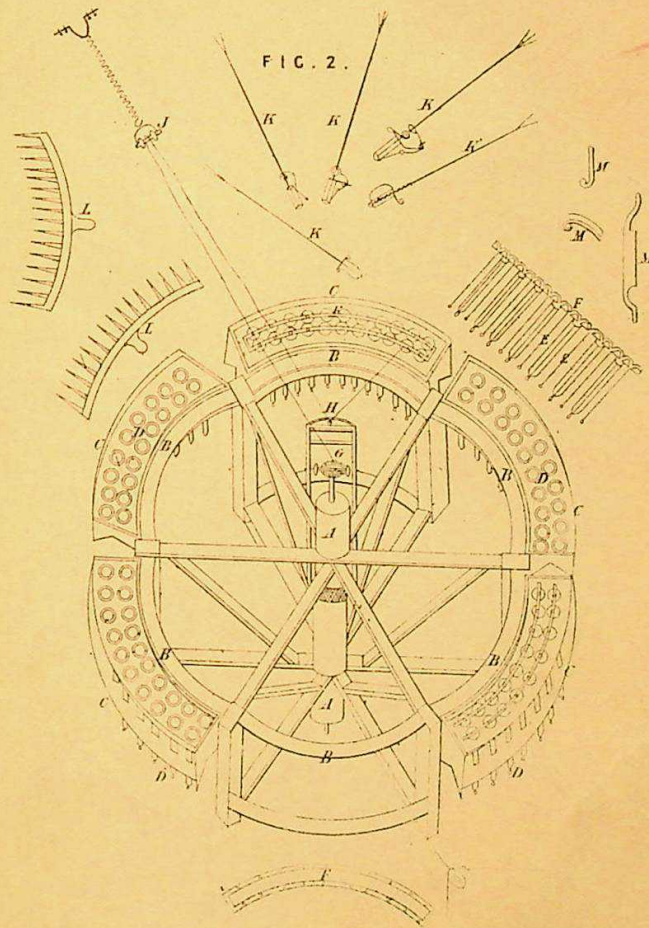


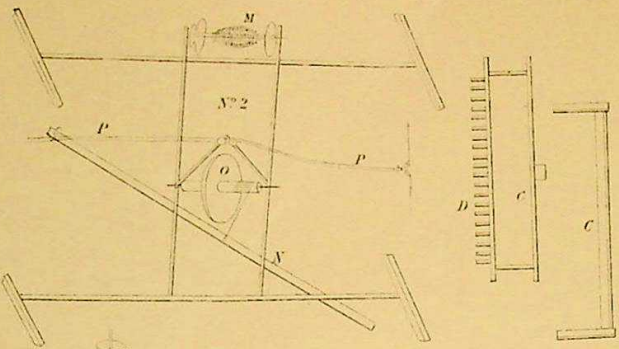
FIG. 2.



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FIG. 3.



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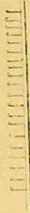
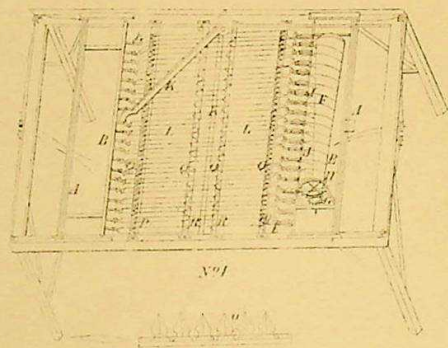
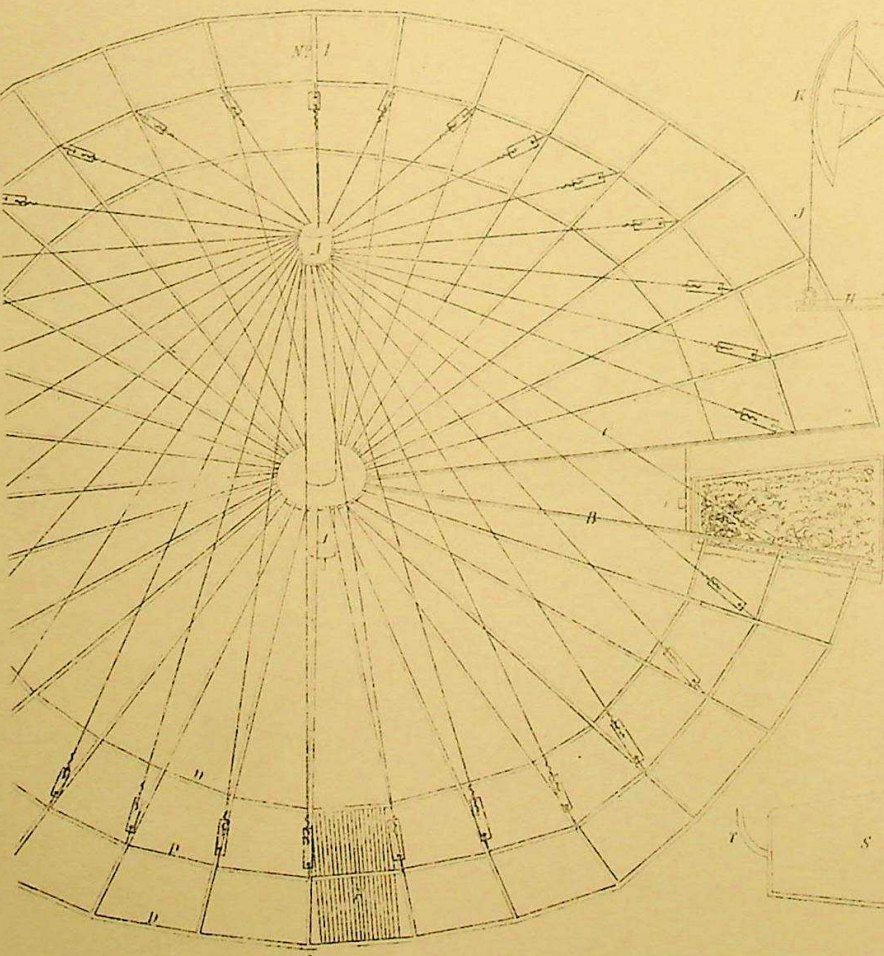
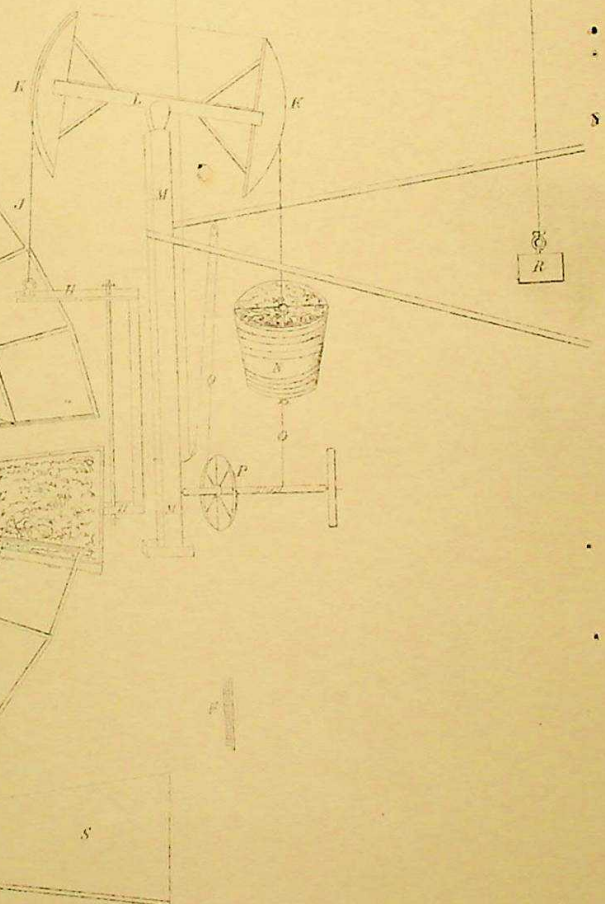


FIG. 4.



N° 2





A.D. 1796 N° 2108.

Manufacture of Candles, &c.

SAMPSON'S SPECIFICATION.

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, JOSEPH STACEY SAMPSON, of Tabernacle Walk, Moorfields, in the County of Middlesex, send greeting.

WHEREAS His present Majesty King George the Third, by His Letters Patent under the Great Seal of Great Britain, bearing date at Westminster, the Twenty-fourth day of May last past, hath given and granted unto me, the said Joseph Stacey Sampson, my executors, administrators, and assigns, special licence, full power, sole privilege and authority, to make, use, exercise and vend, within England, Wales, and the Town of Berwick-upon-Tweed
10 during the term of years therein mentioned, my "Invention of AN ART OR METHOD OF CUTTING UP TALLOW, FAT, SPERMACEIL, AND WAX, FOR MELTING, AND OF MAKING THE SAME INTO CANDLES;" in which said Letters Patent there is contained a proviso obliging me, the said Joseph Stacey Sampson, by an instrument in writing under my hand and seal, to cause a particular description of
15 the nature of my said Invention, and in what manner the same is to be performed, to be inrolled in His Majesty's High Court of Chancery within one calendar month next after the date of the said recited Letters Patent, as in and by the same (relation being thereunto had) may more fully and at large appear.

20 NOW KNOW YE, that I, the said Joseph Stacey Sampson, in compliance with the said proviso, do hereby declare that the nature of my said Invention, and the manner in which the same is to be performed, is particularly described and ascertained by the respective plans hereunto annexed, and the following descriptions thereof (that is to say):—

For Examination Only.

Sampson's Improvements in the Manufacture of Candles from Tallow, Wax, &c.

Figure 1 is a machine for cutting up tallow, fat, spermiaceti, and wax for melting. A is the box which contains the tallow, &c. to be cut up; B, the grate which covers over the box when filled; C, the knife which cuts the tallow through the aperture of the grate; D, D, the pole to which the knife is fastened; E, E, two sections of the pole; F, F, the slider wherein the pole is fixed; G, the crank, by which the machine is put in motion; H, the pinion which is fixed to the crank; I, the wheel, which is fastened over one end of the spindle; K, the pinion at the other end of the spindle, which works in the coggs of the pole; L, the coggs of the pole, facing the crank; M, the gudgeon of the spindle, near the pinion; N, N, the levers which keep the pole in ballance when raised; O, the chain which leads from the pole to the lever of the spindle, with fixtures; P, the lever; Q, the spindle; R, R, the two fixtures which draw the bolts by which the slider is confined from the sockets; S, S, the two fixtures, with springs, which move the slider forward; T, T, T, T, the pins inserted in the pieces which support the slider, and against which the springs have a bearing; V, V, the two bolts, together with the triggers which draw them from the sockets; W, W, the sockets into which the bolts enter to keep the slider steady; X, the fly wheel, with coggs near the center; Y, the pinion which turns the fly wheel; Z, the spindle over which the pinion is fastened, and which unites to the crank.

This machine consists of a square frame, well supported with braces, but of no particular form or dimensions; it is about six feet in height, the upper and under sides of which are horizontal. On its under side is placed a square double box, or two sections of boxes, each having two opposite vertical sides secured to an under side or bottom. These, when slipped one within the other, and hooked to the corners, make the box, the top of which is left open to receive the tallow, &c. The inner section is for the convenience of drawing out the tallow, &c., after it is cut, and the outer or stationary section is caused to move round a center in or about the middle of the machine, for the convenience of cross cutting the tallow, &c. When the box is filled with tallow, it is covered over with a grate of iron or other metal, which grate has a number of apertures. The outer edges of the grate project horizontally over the inner edges of the box; this grate is for the purpose of keeping down the tallow, &c., and guiding the knife which cuts it. In the upper part of the machine there is a moving frame or slider, which moves horizontally parallel to the sides of the machine, either in grooves or between four straight pieces of timber, two on each side, firmly secured to the machine. The under pieces bear the weight of the slider, and the upper pieces keep it from rising while the machine is in operation. In this slider is fixed, perpen-

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dicular, the rack or pole to which the knife is fastened. The pole, which may or may not be of cast iron, works perpendicularly with the knife, which is in a square form; its under edge, which is the cutting edge, extends horizontally over the box, and from side to side in the clear. In the pole of the knife
5 there is a row of coggs, which may or may not be tied together by a strip of iron extending over their ends. The coggs stand in a right line, vertical on that side which faces the crank or winder by which the machine is worked. This crank has either a pinion fixed to it, which turns a cogg wheel, fastened over the end of a spindle; or, otherwise, the crank itself is fastened to this
10 spindle, over the other end of which is fixed a pinion that plays into the coggs of the pole. The end of the spindle, passing a little through the pinion, has a bearing against a ledge that is firm to the pole, which ledge encompasses the coggs and is equally distant from them, allowing the pinion to work freely on both sides and round the top and bottom cogg of the same; the end of
15 the spindle glides at the same time against the inner side of the ledge. The said spindle works in a gudgeon at or near each end. Near the end which goes through the pinion the gudgeon is fixed in one end of a rod or strake of iron, that is nearly or quite perpendicular, the other end of which is so fastened to the slider as to allow it to cant with the spindle; or, otherwise, the gudgeon
20 is made sufficiently wide to admit the spindle to move so far sideways as to allow the pinion to traverse from side to side above the top and below the bottom cogg, which causes the knife to rise and fall alternately, by turning the crank one way. At the end annexed to the crank the gudgeon may be allowed to move, to favor the working of the spindle. A fly wheel
25 may be introduced to regulate the motion, which may be of any size, fastened over the crank or otherwise, variously fixed and attached to the moving parts of the machine, which are connected with the slider; but of the various ways of fixing the fly, that of fixing it vertically in front of the slider is the most eligible. When the box is filled with tallow, and covered with the
30 grate, the crank is then turned either by manual force, steam, or any other power, that forces down the knife through the first aperture of the grate to the bottom of the box which cuts the tallow in its descent. The box may or may not have grooves in the sides to direct the course of the knife. When the knife is down, the pinion works over the uppermost cogg of the pole, which,
35 by the revolving of the crank, is carried to the opposite side to which it was in forcing down the knife; it is then forced back again by continuing the crank one and the same way. When the knife is raised so high as to clear the grate, it advances forward with the slider, by means of a lever, which is made firm at one end in or near the middle of a horizontal spindle, and square to

Sampson's Improvements in the Manufacture of Candles from Tallow, Wax, &c.

it; the other end of the lever is attached to a chain, which is secured to the pole above; each end of the spindle is fixed to the slider in a gudgeon, and is about as long as the two sides of the slider, which are parallel to it; this spindle has two fixtures to it, one at each end, near to the said gudgeons, extending about three inches out from the spindle. At the end of each of 5 these fixtures there is a spring catch, which moves the slider forward to its proper distance on raising of the lever, by their bearing endwise against two pins or ratch teeth, of which there are to the number of the apertures in the grate, in each of the pieces which support the slider. On lowering of the lever, the springs fall off from the pins against which they had a bearing, and 10 yield to the two next in course, which they pass by and bear against on the return of the lever, in the same manner as they did against the two preceeding them, which moves the slider forward as before. There are likewise two other fixtures to the last-mentioned spindle, each standing a little distant from the two above described, and between them and the lever; these are for the 15 purpose of relieving the slider from the barriers, whereby it is kept stationary during the falling and rising of the knife. The barriers consist of two bolts fixed in the slider, one end of each bolt is united to the end of a shank or trigger; these bolts, by the pressure of a spring over the end of each, are directed through a part of the slider into sockets made in the aforesaid pieces 20 whereon the slider moves. Each trigger operates as a lever, by working over a pin, in or about the middle. On raising the lever of the spindle, the fixtures glide against the two triggers, which draws the bolts out of the sockets, previous to the lever rising so high as to move the slider forward, after which and while the lever continues to rise, the fixtures pass by and relieve the 25 triggers, which spring back, and the bolts enter into the sockets next in course. On the levers descending, the fixtures return by gliding against the opposite side of the triggers to which they were in drawing the bolts, by the triggers yielding to them. In the upper part of the slider there are two ballance levers, which are about two feet in length, the fulcrum of each lever is 30 fixed near the pole of the knife, one on each side. The one end of the levers enter through two apertures which are made in the pole (one through each aperture) a little above the coggs, which, when the pole is up, bring the levers nearly or quite on a level; the other end of them is extended, and otherwise made sufficiently heavy to counterballance the weight of the pole, 35 together with the knife. When the knife descends, the levers can't withdraw out of the pole and glide against it untill the return of the knife, they then re-enter through the pole and acquire the ballance as they return to a level. When the knife has cut the tallow through the several apertures of the grate,

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the grate is then raised up by the help of a lever, pulleys, or otherwise by hand, and the box turned round one-fourth of the compass, which is covered again with the grate; the slider is likewise moved back, and the crank turned as before, which carries the knife through the said apertures, and cross cuts
 5 the tallow; the grate is then taken off, and the inner section of the box drawn from the outer one, by means of a rope or chain which leads from the box to a cylinder that is turned by a crank, which brings out the tallow ready and proper for melting. The above machine may be made to work by reversing the mode, which is, to fix the coggs of the pole in the place of the ledge, and
 10 the ledge in the place of the coggs; also to fix the slider underneath the box, and the pole in the upper part of the machine; the box will then move under the knife, which will cut the tallow through the several apertures of the grate in the same manner as though the box stood still, and the knife moved over it. In either case the slider, and likewise the two sections of the box, may move
 15 on rollers to lessen the friction.

Figure 2 is a machine for moulding candles and preparing the wicks for the same. A, A, is the shaft of the wheel; B, B, B, B, B, B, the sections; C, C, C, C, C, the frames which contain the moulds; D, D, D, D, the moulds as inserted in the frames; E, E, the moulds, separate from the frames with the
 20 wick through their centers. F, F, F, F, the circular bars which are on the top of the moulds; G, the spool of wick; H, the point through which the wick is drawn; I, the spring and pulley by which the wick is suspended; K, K, K, K, K, the instruments used in wicking the moulds; L, L, the utensils for prying up the bars, &c.; M, M, M, other utensils which sever
 25 the wicks between every two candles. This machine consists of a horizontal wheel with an upright shaft, whereon it turns. The wheel is formed by several sections of a circle, the radius of which circle is according to the length of the candles when moulded. The frames, which contain the candle moulds, are likewise made circular, and fitted on the outside of the sections,
 30 one to each section, or several, one above the other. In these frames the moulds are inserted vertically, in circular rows, one, two, or more rows in each frame, at proper distances one from the other. A circular bar of copper or other hard metal extends over the top of the moulds in each row, admitting of a passage into the moulds on one or both sides of the bar. The
 35 bars of the several rows in each frame may or may not be united in one, and consist of as many holes or inlets as there are moulds, which they extend over centrally. The inlets are made tapering from the upper to the under side of the bar, to receive in the instrument freely which carries through the wick. A spool of wick is fixed either above, below, or over against the point, through

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which it is drawn in wicking the moulds, which moulds being equally distant from said point or radius, as above, the wicks become of equal lengths in the process of wicking. In the case of several rows in each frame, the said point is made to shift occasionally to the above distance from each row. The wick may be caused to run directly from the spool, or otherwise, over a pulley 5 suspended by a small spiral spring at a convenient distance, for the purpose of gradually continuing the velocity of the spool whilst wicking the moulds. There may likewise be one or more pulleys at the aforesaid point to direct the wick through the passage. The wicking of the moulds is performed by an instrument of steel or other metal, a little exceeding the length of the 10 candles, which instrument has a handle at one end, to which the hand is applied, and at the other end two or more prongs, which attaches and secures the wick at the aforesaid point, the end of the wick being previously fastened near the first mould in the row. By applying one hand to the instrument, the wick is drawn from off the spool through the passage to the first inlet of 15 the bar, where it doubles in, and by pushing it with the instrument, is carried in a central direction untill the loop or bend of the wick at the end of the instrument appears through the bottom of the mould, where the other hand receives it from the said instrument, which instrument is then withdrawn and attached to the wick, as before, which is carried through the next mould. It is thus 20 carried through the moulds in rotation, untill they are supplied with wick throughout. The wick is then fastened near the last mould of a row, making one chain of wicks, either in one row or in the several rows of each frame. The frames may have a number of small elastic sprigs extending out from their inner edges, nearly perpendicular, which by carrying the wicks circular with 25 the instrument, will keep it from closing untill it reaches the inlet of the bar; the sprigs will then give way to the wick as it passes into the moulds. When the moulds are supplied with wick, as above mentioned, the wheel is then turned to receive the material for the candles, which is contained in a vessel that is elevated above the wheel. This vessel may have one or more 30 apartments or small vessels adjoining it, into which the material is admitted, and shut off from the main vessel by means of a key, and by the same means is drawn from the apartment in at the top of the frame, which frame rises at the edges to prevent the material from running over while it is supplying the moulds in at the passages on each side of the bar. In the mean time, those 35 of the next section are prepared with wick. After the candles are moulded throughout the several sections, the frames are either taken off from the wheel or let down through grooves, which may be made in each section for the purpose, or they may remain in their station. When the candles are fit for

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drawing, an utensil is used in prying up the bars. This utensil may consist of any number of prongs not exceeding the number of spaces between the moulds in each row, or of the several rows in each frame. The prongs (which may or may not have sharp edges on their upper sides) are caused to
5 go under the bars, and to pry against them, which disengages the candles from the moulds; the prongs are then withdrawn from under the bar, and these, or cutters of a similar utensil, are directed between the bar and the wick, which sever it between every two candles, or otherwise a tool with an edge or sharp corner (either with or without a handle at each end)
10 glides horizontally on the face of the bar, and severs the wick. The bars are then taken off, and the candles drawn from the moulds ready and fit for use. The above machine may be so contracted as to make the radius of the sections the center of the wheel, in which case the frames may or may not be united in one on the wheel's verge, with the
15 moulds ranged in a true circle; the wick will then be drawn from the center. There may be either one spool of wick fixed in a small frame, which frame is made to swivel round the center of the wheel, or there may be spools to the number of the sections, which spools are filled with wick by the turning of a band wheel, the band of which leads into a circular channel that
20 is over the end of the spool. The instrument used in wicking the moulds may, (if requisite to prevent a free expansion of light by a twisted wick,) be made spiral at the handle, which handle may be concave, where it will pass through a nut on pushing the wick into the moulds, and twist it in its descent; or there may be a spring, similar to the main spring of a watch, fastened over the
25 instrument near the handle, the outer end of which spring is in contact with a string or small chain, which leads over a pulley that stands out from the handle to the one end of a fixture, the other end of which fixture is made secure to the handle. The end of the fixture to which the string is attached, and which may or may not act by a spring, is pressed by the hand towards the handle,
30 which draws the aforesaid spring from over the instrument, and turns it within said handle, twisting the wick at the same time, or otherwise the outer end of the spring is immediately attached to the end of the fixture, which fixture may either be secured at one end, as above mentioned, or in or about the middle, allowing the two ends to cant in and out from the handle, which will
35 turn the instrument and twist the wick; or, instead of turning the instrument by drawing out the spring, the outer end of the spring may be fixed to the aforesaid handle, and a small pulley fastened over the instrument near the spring, with the spring round the pulley that was otherwise fastened to the spring, as above; then, by turning the pulley, the spring will run in and the

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wick twist accordingly. The frames for the moulds may be in the common form, with the mould inserted either in straight lines or promiscuously. The candles may likewise be made by the aforesaid instrument and utensils, without the use of a wheel, and the wicking of the mould, by running a chain of wicks previous to their being cut, may be performed by taking the wick in at either end of the mould with the above instrument, or with a hooked instrument similar to those in common use. The moulds may be such as are common, excepting the lower or taper'd end, which may, if required, have little or no swell on the inside, and may be made of a different and harder metal than the body of the mould. There may likewise be two springs fixed at the lower end of each mould, one on each side, which, by their inclining one towards the other, meet under the point of the mould. The springs will yield to the instrument on pushing through the wick, and close upon the wick as the instrument withdraws, which will keep the wick from contracting and leaning out of the center of the mould. Previous to the candles being cooled, the moulds may be immersed upside down in cold water, that they may the sooner be prepared for drawing.

Figure 3 is a machine for cutting and dressing the wicks for dipt candles; A, A, (No. 1,) the two sliders, which move on the top of the frame; B, B, the two inner frames, which are connected with the sliders; C, C, a slider and inner frame separate; D, D, D, the studs of the inner frame; E, E, E, E, E, the pulleys, which play over pivots inserted in the studs; F, F, the cylinder, by which the pulleys are turned; G, the pinion, which goes over the small end of the cylinder; H, the wheel with a crank, which plays into the pinion; I, I, the pulleys near the cylinder; K, K, the sheers, which cut the wick; L, L, the wick, as it runs over the pulley; M (No. 2), the spool of the wick; N, the treadle, which turns the wheel underneath the machine and draws back the sliders; O, the wheel; P, P, the lines, which lead from the wheel to the two outer corners of each slider; Q, Q, Q, Q, Q, (No. 1,) the springs, between which the wicks are closed; R, R, R, R, the straight pieces of wood, to which the springs are fixed. This machine consists of a horizontal frame, about four feet by two feet and an half square, and nearly three feet high. On the top of this frame are two small frames or sliders, which are caused to move as one, to and from each other horizontally. The sliders are about thirty inches long and eight inches wide, extending lengthwise from the front to the backside of the machine; each of them are formed either of three or four pieces of wood, nearly an inch thick; in case of three pieces only, the inner sides are left open. There are likewise two other frames, a little smaller than the above described, but nearly of the same dimensions, which are each one connected with and

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come within the outlines of each slider; they are made to cant in and out of the sliders by turning on pivots at the two inner corners of each. These inner frames have several prongs or studs projecting two inches or upwards on a level out from the edges, which stand facing one the other across the middle of the machine. Each frame has an equal number of studs, which are as far distant one from the other as the wicks when suspended on the rods. In at the upper side of each stud a pivot is inserted perpendicular, over which plays a small pulley, of which pulley there are to the number of the wicks that are cut at once. The pulleys have each of them channels to receive the wick, and all or the greater part of those of one frame whereon is a cylinder have a second channel, which is lower on the pulley than the first, to receive the bands by which they are carried, which bands go over the cylinder. This cylinder is made tapering from one end to the other, and has a bearing on two pivots at each end. The cylinder is set lengthwise over the frame, square to the machine, with its tapered end in front, having a number of circular channels to receive the bands, which channels are opposite to the pulleys of the frame whereon it rests. Over the small end of this cylinder is a pinion, into which a vertical wheel plays, which is turned by a crank, or there may be several wheels connected, which, by turning the crank, revolve the cylinder and turn the pulleys; there are likewise other pulleys near the cylinder, to the number of those that draw the wicks, for the purpose of directing the bands. The person who works the machine faces it in front, from which to the opposite side is about two feet and an half, agreeable to the length of a pair of sheers by which the wicks are cut, the under part of which extends horizontally from the front, through the middle to the opposite side of the machine, parallel to the frames, which are on each side, and the upper part rises above it. The sliders with the inner frames are moved one towards the other by applying one hand to each slider, until the pulleys of each frame pass one by the other between the sheers. The wick is then drawn from a spool, which is at the opposite side of the machine, over one or two directing pulleys (one of which pulleys may be suspended by a spring, as described in the machinery for moulding candles) between the two setts of pulleys above mentioned to the front, and there fastened. The sliders are then moved back by bearing on a treadle, which brings the pulley against the wick each way. The treadle is confined at one end near the floor and suspended by a line in or about the middle, which line goes over a spindle that passes through the center of a vertical wheel which is a little below the sheers, which wheel is about two feet in circumference with a channelled edge that receives four lines, which

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lines draw back the sliders; the lines lead from the two outer corners of each slider to the four corners of the machine, from whence they are directed at right angles to other pulleys, which are about half way between the corners on each side where the two lines of each slider meet, from thence they are directed by pulleys into the channel of the wheel. When the pulleys of each frame 5 move back against the wick, the cylinder is revolved by applying one hand to the crank which turns the pulleys on one side upon the wick, and draws it out each way over the pulleys on both sides of the sheers to a proper distance for the length of the wicks, in the meantime the wick is lightly strained by bearing on the treadle. The reason of the cylinders having a greater circum- 10 ference at one end than at the other is, that all the wicks are drawn over the first pulley which stands opposite to it, which pulley is required to move faster than any of the rest, the second nearly as fast as the first, and so on in gradation throughout the whole. When the wick is drawn to the lengths required for the candles, the inner frames are canted up by applying one hand to each, 15 which lowers the pulleys and lightly presses the wick into separate apartments, where every two parts are caused to meet between two inclining springs, which springs are fixed to four narrow pieces of wood, two on each side of the sheers, the ends of which are let into grooves made in the front and back side of the machine. These pieces are moved to any distance from the sheers that the 20 length of the wicks may require; the two pieces which are farthest from the sheers are near to the pulleys when the wick is drawn to a proper length. There are likewise four flat horizontal pieces of wood, not presented in miniature, as they would obscure other parts of the machine; they are of one description, two of which fill up the spaces between the aforesaid pieces which 25 are on each side of the sheers; the other two are elevated so high above them as to admit the cylinder to pass between their under sides and the upper sides of those which are fixed below the wicks, which upper and under sides may, if necessary, have a covering that shall (when the elevated pieces are brought down to meet with the pieces which are fixed beneath them) have a tendency to press 30 the wick into the apartments, where it will remain untill the wicks are cut and drawn into form. The pulleys which were canted down are canted still lower, untill the wick is freed from them by its slipping over their tops. The frames are then moved back and canted down into the sliders, which raise the pulleys, at the same time a couple of rods, with hooks 35 inserted in them, are handed by a person who attends at the opposite side of the machine, the hooks of which are guided into the loops of the wick, which loops were over the pulleys on each side; the upper part of the sheers is then

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brought down upon the wick, which cuts it through the middle into equal parts. The rods with the hooks are then raised, which brings the wicks that were before in separate parts on each side of the pulleys to meet at the hook; they are then lowered back into every other apartment, and by drawing the
5 rods horizontally or inclining, the two parts of each wick are drawn into one by and between the springs. They are then taken to the dipping machine. Figure 4 is a machine for dipping candles. A, A, (No. 1,) the perpendicular spindle which goes through the center of the wheel; B, one of the arms which is braced to the spindle; C, the brace which supports the
10 arm; D, D, D, three of the straight pieces of wood by which the wheel is formed; E, a brace, which distends the two arms, between which the vessel rises above the wheel; F, F, the rods; G, (No. 2,) the mould or vessel which contains the materials for the candles; H, H, the frame whereon the vessel rests; I, the rope or chain by which the frame and vessel are suspended;
15 K, K, the two arches secured to the two ends of the beam or lever; L, the beam; M, M, the pillar on which the beam traverses; N, the weight suspended at one end of the beam; O, the rope which leads from the under side of the weight to the shaft of the vertical wheel; P, the wheel; Q, Q, the small rope or line, which leads over pulleys to an inferior weight; R, the weight at
20 the end of the line; S, the steam tube, which is laid over the vessel to finish off the candles; T, the end of the pipe through which the steam is conducted into the tube. This machine may be of any size, and consists of a wheel with a perpendicular spindle through its center, to which a number of horizontal arms are braced from their upper sides to the upper part of the spindle; they are
25 likewise braced at equal distances one from the other by several straight pieces of wood, which pieces form the circle of the wheel. The space between two arms is according to the width of the mould or vessel which contains the material for the candles wherein they are dipped. The pieces have gains in the upper part of them to receive the candle rods; one division or column of candles
30 will require two pieces, and two columns will require three pieces between two arms. Their distances, one from the other, are according to the length of the rods which rest upon them. The rods are about an inch by half an inch square, with the inch vertical. In the under side of each rod hooks are inserted at such distances as the candles will require when suspended on
35 them. The hooks may be made of wire, sufficient to support the weight of a candle, and extend about three inches and a half out from the rod. The vessel which contains the material for the candles is supported at the under side by a frame which extends horizontally underneath that and the wheel,

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and vertically a little from the wheel's outer edge to the height required for raising and lowering the vessel. It then projects over it so far as to make it convenient to suspend the weight of the frame and vessel centrally; when the vessel is filled, it may be suspended either by a rope or chain, fastened to the upper part of the frame that projects over the wheel; from thence it leads over an arch, which is elevated directly above it. The arch is secured to the end of a beam or lever, which traverses vertically upon an axis, supported by a pillar. The beam has a similar arch at the other end, over which the chain is carried, which leads from one arch to the other at the two upper corners (or otherwise there may be two separate chains). It then descends perpendicularly to a weight nearly sufficient to ballance the weight of the frame and vessel when the vessel is filled. To the under side of the weight a rope is fastened, which goes down over the shaft of a vertical wheel, over which wheel is another small rope that leads over pulleys to an inferior weight, which, with the first-mentioned weight, balances the frame and vessel, as above; by lightly drawing the last-mentioned rope one way, the vessel rises in a perpendicular direction (guided by ledges which run in grooves on each side), and immerses or dips a division of candles which are suspended over it, and by drawing it the other way the vessel is lowered back from them. A fly wheel may be added to regulate the motion whilst the vessel is descending. When the vessel is lowered from the candles, the wheel (which turns on a center at each end of the spindle) is then moved round so far as to bring the next division of candles over the vessel, which vessel is raised and lowered as before. They are thus dipped in rotation throughout, repeatedly, untill they have increased to the proper size. A flat steam tube is then laid horizontally over the top of the vessel, the under and vertical sides of which tube may be of wood, and the upper side of copper, or of any other metal. The steam is forced from a small boiler through a pipe into the tube which presses out the air at one or more apertures. When the upper part of the tube becomes hot, it is then raised by pulling upon the rope, as in the case of dipping to the tips of the candles, which will have collected beneath the lower end of the wicks and melts them off, one division after another throughout, which finishes them complete. During the process of dipping, the vessel descends so low as to receive the material for the candles in at the top by a trough which conducts it from a brass lock that is fixed in or near the bottom of the pan in which the material is melted. When the candles are finished, the vessel is raised above the level of the pan through a space left in the wheel for that purpose; the remainder of the material is then

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returned back by the trough into the pan through an aperture at or near the under side of the vessel.

5 In witness whereof, I, the said Joseph Stacey Sampson, have hereunto set my hand and seal, this Seventeenth day of June, in the year of our Lord One thousand seven hundred and ninety-six, and in the thirty-sixth year of the reign of King George the Third.

JOSEPH STACEY SAMPSON. (L.S.)

10 **AND BE IT REMEMBERED**, that on the same Seventeenth day of June, in the year above written, the aforesaid Joseph Stacey Sampson came before our Lord the King in His Chancery, and acknowledged the Specification aforesaid, and all and every thing therein contained. And also the Specification aforesaid was stamped according to the tenor of the Statute in that case made and provided.

E. LEEDS.

Inrolled the same Seventeenth day of June, in the year above written.

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